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=> s iterative independent component analysis L1 0 ITERATIVE INDEPENDENT COMPONENT ANALYSIS

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=> d ibib abs 13 1-4

AUTHOR:

PUB. COUNTRY:

L3 ANSWER 1 OF 4 MEDLINE on STN ACCESSION NUMBER: 2003591508 MEDLINE

DOCUMENT NUMBER: PubMed ID: 14673654

TITLE: Estimation of single-trial multicomponent ERPs:

differentially variable component analysis (dVCA).
Truccolo Wilson; Knuth Kevin H; Shah Ankoor; Bressler

Steven L; Schroeder Charles E; Ding Mingzhou

CORPORATE SOURCE: Department of Neuroscience, Brown University, 190 Thayer

Street, Providence, RI 02912, USA.

CONTRACT NUMBER: MH 42900 (NIMH)

MH 62404 (NIMH) T32 M 07288

SOURCE: Biological cybernetics, (2003 Dec) 89 (6) 426-38.

Journal code: 7502533. ISSN: 0340-1200. Germany: Germany, Federal Republic of Journal; Article; (JOURNAL ARTICLE)

DOCUMENT TYPE: Journal; LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200405

ENTRY DATE: Entered STN: 20031216

Last Updated on STN: 20040529 Entered Medline: 20040528

AB A Bayesian inference framework for estimating the parameters of single-trial, multicomponent, event-related potentials is presented. Single-trial recordings are modeled as the linear combination of ongoing activity and multicomponent waveforms that are relatively phase-locked to certain sensory or motor events. Each component is assumed to have a trial-invariant waveform with trial-dependent amplitude scaling factors and latency shifts. A Maximum a Posteriori solution of this model is implemented via an iterative algorithm from which the component's waveform, single-trial amplitude scaling factors and latency shifts are estimated. Multiple components can be derived from a

single-channel recording based on their differential variability, an aspect in contrast with other component analysis techniques (e.g., independent component analysis) where the number of components estimated is equal to or smaller than the number of recording channels. Furthermore, we show that, by subtracting out the estimated single-trial components from each of the single-trial recordings, one can estimate the ongoing activity, thus providing additional information concerning task-related brain dynamics. We test this approach, which we name differentially variable component analysis (dVCA), on simulated data and apply it to an experimental dataset consisting of intracortically recorded local field potentials from monkeys performing a visuomotor pattern discrimination task.

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ACCESSION NUMBER: 2004:129398 BIOSIS DOCUMENT NUMBER:

PREV200400129002

Estimation of single-trial multicomponent ERPs: TITLE:

Differentially variable component analysis (dVCA).

AUTHOR (S): Truccolo, Wilson; Knuth, Kevin H.; Shah, Ankoor; Bressler,

Steven L.; Schroeder, Charles E.; Ding, Mingzhou [Reprint

Author]

Center for Complex Systems and Brain Sciences, Florida CORPORATE SOURCE:

Atlantic University, 777 Glades Road, Boca Raton, FL,

33431, USA ding@fau.edu

Biological Cybernetics, (December 2003) Vol. 89, No. 6, pp. SOURCE:

426-438. print.

ISSN: 0340-1200 (ISSN print).

Article DOCUMENT TYPE: English LANGUAGE:

ENTRY DATE: Entered STN: 3 Mar 2004

Last Updated on STN: 3 Mar 2004

A Bayesian inference framework for estimating the parameters of single-trial, multicomponent, event-related potentials is presented. Single-trial recordings are modeled as the linear combination of ongoing activity and multicomponent waveforms that are relatively phase-locked to certain sensory or motor events. Each component is assumed to have a trial-invariant waveform with trial-dependent amplitude scaling factors and latency shifts. A Maximum a Posteriori solution of this model is implemented via an iterative algorithm from which the component's waveform, single-trial amplitude scaling factors and latency shifts are estimated. Multiple components can be derived from a single-channel recording based on their differential variability, an aspect in contrast with other component analysis techniques (e.g., independent component analysis) where the number of components estimated is equal to or smaller than the number of recording channels. Furthermore, we show that, by subtracting out the estimated single-trial components from each of the single-trial recordings, one can estimate the ongoing activity, thus providing additional information concerning task-related brain dynamics. We test this approach, which we name differentially variable component analysis (dVCA), on simulated data and apply it to an experimental dataset consisting of intracortically recorded local field potentials from monkeys performing a visuomotor pattern discrimination task.

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on STN ACCESSION NUMBER:

2004141625 EMBASE

TITLE:

Relative gradient speeding up additive updates for

nonnegative matrix factorization.

AUTHOR:

Liu W.; Zheng N.; Li X.

CORPORATE SOURCE:

W. Liu, Inst. of Artificial Intell./Robotics, Xi'an

Jiaotong University, Xi'an, Shaanxi Province 710049, China.

wxliu@aiar.xjtu.edu!cn

SOURCE: Neurocomputing, (2004) 57/1-4 (493-499).

Refs: 20

ISSN: 0925-2312 CODEN: NRCGEO

PUBLISHER IDENT.: S 0925-2312(04)00004-9

COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article

FILE SEGMENT: 027 Biophysics, Bioengineering and Medical

Instrumentation

LANGUAGE: English SUMMARY LANGUAGE: English

AB There exist two kinds of **iterative** updates for nonnegative matrix factorization: additive and multiplicative. The former does not

for blind source separation and independent component

take into consideration the characteristic of the parameter space of the constrained optimization while the latter holds the nonnegativity well. The relative gradient has better convergence rate than the ordinary gradient, and has been successfully used for neural learning, especially

analysis. This paper applies the relative gradient to speed up the additive updates for nonnegative matrix factorization according to square Euclidean error. The primary experiments on synthetic and real datasets demonstrate the effectiveness of the proposed method. .COPYRGT. 2004 Elsevier B.V. All rights reserved.

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ACCESSION NUMBER: 2002237219 EMBASE

TITLE: Study of independent component

analysis and removal of ECG artifacts from EEG.

AUTHOR: Zhou W.-D.; Jia L.; Li Y.-Y.

CORPORATE SOURCE: W.-D. Zhou, Sch. of Info. Sci. and Engineering, Shandong

University, Jinan 250100, China

SOURCE: Chinese Journal of Biomedical Engineering, (2002) 21/3

(226-230+210).

Refs: 10

ISSN: 0258-8021 CODEN: ZSYXEI

COUNTRY: China

DOCUMENT TYPE: Journal; Article

FILE SEGMENT: 018 Cardiovascular Diseases and Cardiovascular Surgery

027 Biophysics, Bioengineering and Medical

Instrumentation

LANGUAGE: Chinese

SUMMARY LANGUAGE: English; Chinese

AB An iterative ICA algorithm is studied and presented. The ECG artifacts are removed successfully using the ICA algorithm. Based on information theory, an objective function is given, and a fast iterative ICA algorithm is derived by optimizing the function. The method does not employ higher order statistics and converges fast. A deflation technique is used to remove previously extracted signals from the mixture and independent components can be sequentially extracted. The proposed method is verified with experiment of artifact removal.

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